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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/317,986 | 05/25/1999 | HIDENORI YAMANAKA | Q54509 | 9754 |

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EXAMINER

BOYD, JENNIFER A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1771

DATE MAILED: 05/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/317,986

Applicant(s)

YAMANAKA ET AL.

Examiner

Jennifer A. Boyd

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,8,10-18 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,8,10,18,21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 3, 2004 has been entered. The Applicant's Amendments and Accompanying Remarks, filed December 3, 2004, have been entered and have been carefully considered. Claims 23 – 24 are added, claims 2 – 5, 7, 9, 19 and 20 are cancelled and claims 1, 6, 8, 10, 18 and 21 – 24 are pending. In view of Applicant's cancellation of claims 19 – 20, the Examiner withdraws the rejection as detailed in paragraph 5 of the Office Action dated June 3, 2004. The invention as currently claimed is not found to be patentable for reasons herein below.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1, 8, 10, 18 and 21 – 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auerbach (EP 709499) in view of Fukata (US 4,454,189).

As to claims 1, 18 and 21 – 22, Auerbach teaches a meltblown microfiber web prepared from polyarylene sulfide polymers, particularly polyphenylene sulfide (Abstract). The fibers

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typically have a diameter between 0.1 and 20 microns (page 1, lines 1 – 15). Auerbach notes that lower viscosity material such as 300 poise polyarylene sulfide can be used (page 6, lines 20 – 35).

As to claims 8 and 10, Auerbach teaches that the polyarylene sulfide may be cross-linked (page 3, lines 40 – 45). The limitation of “thermal oxidation cross-linking treatment” at “160 – 260 degrees Celsius for 1 – 120 hours” is not given any patentable weight. The method of performing the cross-linking is not germane to the issue of patentability of the article itself. The burden is placed upon the Applicant to demonstrate unobvious differences in the final products.

As to claims 23 and 24, Auerbach teaches that the polyarylene sulfide comprises a homopolymer or a copolymer. The copolymer comprises at least 50 mol % or more preferably about 70 mol % of p-phenylene sulfide units (page 3, lines 40 – 55).

Auerbach fails to specifically teach that the polyarylene sulfide has a non-Newtonian coefficient of 1.05 – 1.20 as required by claims 1 and 18, and specifically a coefficient between 1.06 and 1.19 as required by claims 21 and 22.

It is the examiner's position that Ikeda's fibers inherently have a non-Newtonian coefficient of 1.05-1.20.

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-Newtonian coefficient of 1.05 – 1.20, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454

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USPQ 233 (CCPA 1955). In the present invention, one would have been motivated to select such a value by the reasoned expectation of varying the shear stress and rate of shear.

Alternatively, Fukata teaches a sheet comprising randomly dispersed polyphenylene sulfide (PPS) filaments which has outstanding chemical resistance, heat resistance, electrical insulating properties (Abstract). Fukata teaches that the PPS polymer has a non-Newtonian coefficient between 0.9 and 3.0, preferably between 0.9 and 2.0 (column 4, lines 5 – 10). Such a polymer is superior in spin ability and less liable to gelation during melt spinning (column 4, lines 10 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a PPS polymer with a non-Newtonian coefficient between 0.9 and 3.0 as suggested by Fukata for use in the meltblown web of Auerbach motivated by the desire to create easily processed meltblown web which is superior in spin ability and less liable to gelation.

4. Claims 1, 18 and 21 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harwood et al (US 6,130,292) in view of Fukata (US 4,454,189).

As to claims 1, 18 and 21 – 22, Harwood teaches a meltblown polyarylene sulfide fiber web, particularly polyphenylene sulfide (PPS) fibers (Abstract). The meltblown fibers have a diameter ranging from less than 1 micron up to about 12 microns or more (column 7, lines 58 – 64). The PPS resin can be cured, semi-cured or linear PPS (column 4, lines 5 – 10).

As to claims 8 and 10, Harwood teaches that the PPS resin can be cured (column 4, lines 5 – 10). The limitation of “thermal oxidation cross-linking treatment” at “160 – 260 degrees Celsius for 1 – 120 hours” is not given any patentable weight. The method of performing the

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cross-linking is not germane to the issue of patentability of the article itself. The burden is placed upon the Applicant to demonstrate unobvious differences in the final products.

Harwood fails to specifically teach that the polyarylene sulfide has a non-Newtonian coefficient of 1.05 – 1.20 as required by claims 1 and 18, and specifically a coefficient between 1.06 and 1.19 as required by claims 21 and 22.

It is the examiner's position that Harwood's fibers inherently have a non-Newtonian coefficient of 1.05-1.20, because said fibers are subjected to a similar grafting process as applicant.

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-Newtonian coefficient of 1.05 – 1.20, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454 USPQ 233 (CCPA 1955). In the present invention, one would have been motivated to select such a value by the reasoned expectation of varying the shear stress and rate of shear. Furthermore, Harwood teaches that any suitable polyarylene sulfide can be used (column 3, lines 40-42) at any suitable grade (column 4, lines 5-7).

Alternatively, Fukata teaches a sheet comprising randomly dispersed polyphenylene sulfide (PPS) filaments which has outstanding chemical resistance, heat resistance, electrical insulating properties (Abstract). Fukata teaches that the PPS polymer has a non-Newtonian coefficient between 0.9 and 3.0, preferably between 0.9 and 2.0 (column 4, lines 5 – 10). Such a polymer is superior in spinability and less liable to gelation during melt spinning (column 4, lines 10 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention

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was made to select a PPS polymer with a non-Newtonian coefficient between 0.9 and 3.0 as suggested by Fukata for use in the meltblown web of Harwood motivated by the desire to create easily processed meltblown web which is superior in spinability and less liable to gelation.

As to claim 22, although Harwood or Harwood in view of Fukata does not explicitly teach the claimed melt viscosity of from 295 to 400 poise as required by claim 22, it is reasonable to presume that melt viscosity is inherent. Support for said presumption is found in the use of like materials (i.e. a meltblown PPS web comprising cured, semi-cured or linear fibers having a diameter from less than 1 micron up to about 12 microns or more) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property would obviously have been present once the Harwood or Harwood in view of Fukata product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

5. Claims 1, 18 and 21 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al (US 4,950,529) in view of Fukata (US 4,454,189).

As to claims 1, 18 and 21 – 22, Ikeda teaches a nonwoven fabric composed of polyarylene sulfide fiber having a mean diameter of 0.1 to 8.0 microns (Abstract). The fabric is made by the meltblown process (column 5, lines 50 – 65). Ikeda teaches that the resin is apt to be partially-crosslinked (column 3, lines 55 – 60).

As to claims 8 and 10, Ikeda teaches that the resin is apt to be partially-crosslinked (column 3, lines 55 – 60). The limitation of “thermal oxidation cross-linking treatment” at “160 – 260 degrees Celsius for 1 – 120 hours” is not given any patentable weight. The method of

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performing the cross-linking is not germane to the issue of patentability of the article itself. The burden is placed upon the Applicant to demonstrate unobvious differences in the final products.

Ikeda fails to specifically teach that the polyarylene sulfide has a non-Newtonian coefficient of 1.05 – 1.20 as required by claims 1 and 18, and specifically a coefficient between 1.06 and 1.19 as required by claims 21 and 22.

It is the examiner's position that Ikeda's fibers inherently have a non-Newtonian coefficient of 1.05-1.20.

Alternatively, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a non-Newtonian coefficient of 1.05 – 1.20, since it has been held that where general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454 USPQ 233 (CCPA 1955). In the present invention, one would have been motivated to select such a value by the reasoned expectation of varying the shear stress and rate of shear.

Alternatively, Fukata teaches a sheet comprising randomly dispersed polyphenylene sulfide (PPS) filaments which has outstanding chemical resistance, heat resistance, electrical insulating properties (Abstract). Fukata teaches that the PPS polymer has a non-Newtonian coefficient between 0.9 and 3.0, preferably between 0.9 and 2.0 (column 4, lines 5 – 10). Such a polymer is superior in spinability and less liable to gelation during melt spinning (column 4, lines 10 – 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to select a PPS polymer with a non-Newtonian coefficient between 0.9 and 3.0 as suggested by Fukata for use in the meltblown web of Ikeda motivated by the desire to create easily processed meltblown web which is superior in spinability and less liable to gelation.

As to claim 22, although Ikeda or Ikeda in view of Fukata does not explicitly teach the claimed melt viscosity of from 295 to 400 poise as required by claim 22, it is reasonable to presume that melt viscosity is inherent. Support for said presumption is found in the use of like materials (i.e. a meltblown PPS web comprising cured, semi-cured or linear fibers having a diameter from less than 1 micron up to about 12 microns or more) which would result in the claimed property. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald* 205 USPQ 594. In addition, the presently claimed property would obviously have been present once the Ikeda or Ikeda in view of Fukata product is provided. Note *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977).

6. Claims 6, 8, and 10 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Harwood et al (6130292) or Auerbach (EP 709499) each in view of Fukata (4454189) and Senga (EP 353717), as set forth in the previous four actions. The details of the rejection can be found in the Office Action dated January 31, 2001. The rejection is maintained.

Response to Arguments

7. The Applicant has not argued any of the rejections. The Applicant indicated that they are presently preparing a response to the outstanding rejection and expect to file the response soon. Interviews were conducted on January 11, 2005 and January 26, 2005 and the Applicant indicated that another interview would be set up prior to any action is taken on the case.

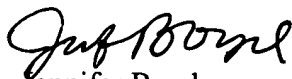
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However, the time for Suspension of Action has expired and no further response has been submitted nor has an interview been requested.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Boyd whose telephone number is 571-272-1473. The examiner can normally be reached on Monday thru Friday (8:30am - 6:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jennifer Boyd
May 25, 2005


Ula C. Ruddock
Primary Examiner
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